

MAP 9 1917

UNIV. OF MICH.
LIBRARY

GOVERNMENT OF PORTO RICO
UNIVERSITY OF PORTO RICO

University Bulletin

RESULTS OF THE
Anthropometric Measurements

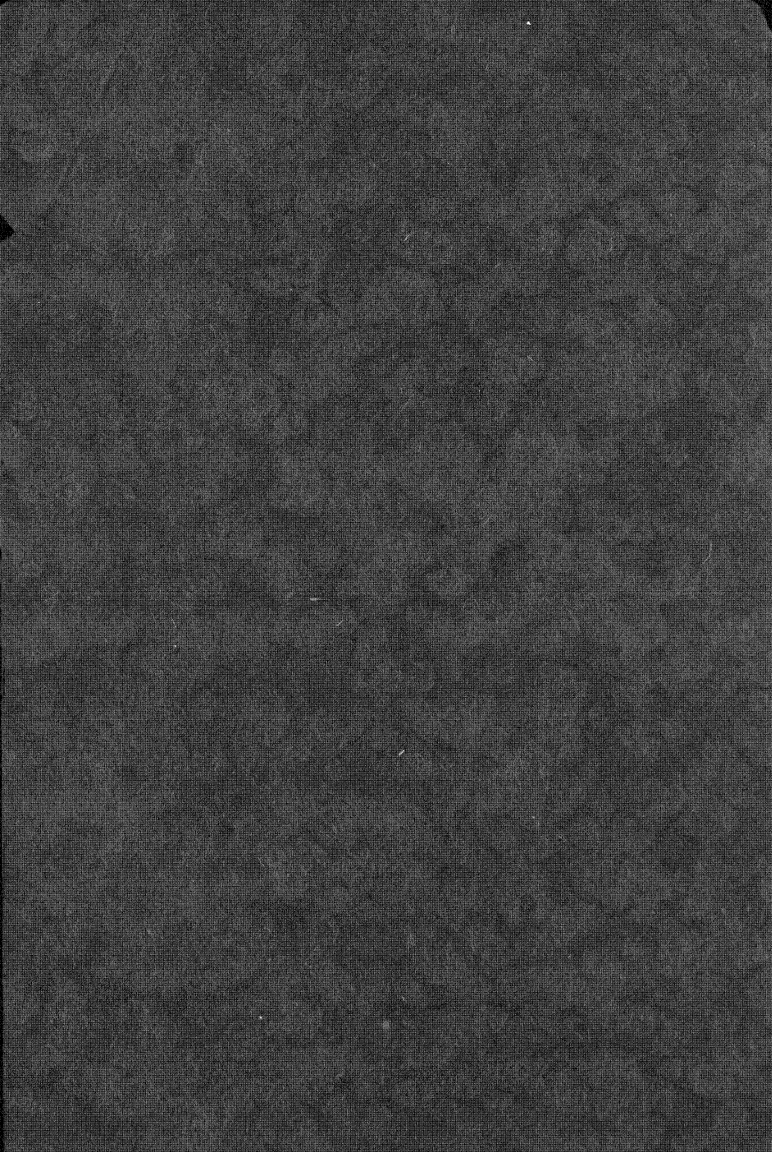
AMONG THE STUDENTS AT THE

University of Porto Rico

JANUARY, 1917

COMPILED BY
FRED K. FLEAGLE,

Dean College of Liberal Arts



GN
58
79
79

GOVERNMENT OF PORTO RICO
UNIVERSITY OF PORTO RICO *University*

University Bulletin

RESULTS OF THE
Anthropometric Measurements

AMONG THE STUDENTS AT THE

University of Porto Rico

JANUARY, 1917

COMPILED BY
FRED K. FLEAGLE,

Dean College of Liberal Arts

SAN JUAN, P. R.
BUREAU OF SUPPLIES, PRINTING, AND TRANSPORTATION
1917

FOREWORD.

At the regular quarterly meeting of the board of Trustees of the University of Porto Rico held on July 19, 1915, the following resolution was passed:

“That every student enrolled in the University in the future, except the pupils in the Practice School, shall pay to the dean of his department a fee of \$1.50 for the University Health Service; that two-thirds of this fee shall go to the medical officer making the necessary examinations, and one-third to the University Athletic Association; that in return, the medical officer shall make at least two medical examinations of each student every year, and shall treat students free of charge on recommendation of the dean, and shall attend athletic games, and care for students in cases of accident; and that the Athletic Association shall issue each student a ticket granting free admission to all games held under its auspices during the year.”

In accordance with this resolution, the results of the first three examinations are here made public, with the hope that they may be of some value in solving one of the many problems confronting us in Latin America. It is believed that this represents the first effort to determine the physical development of the Porto Rican, and probably of the Latin American as well. The measurements for the women used as a basis for this study were taken by Miss Mary Stewart and Miss Mary Russell, physical instructors for women in the University of Porto Rico, while the measurements for men were taken by Dr. Luis A. Saliva, University physician, and Lieut. Bates Tucker, physical instructor for men. The physical examination in the case of both sexes was given by Dr. Saliva.

FRED. K. FLEAGLE,
Dean, College of Liberal Arts.

ANTHROPOMETRIC MEASUREMENTS AMONG STUDENTS OF THE UNIVERSITY OF PORTO RICO.

The results of the third physical and anthropometric examination of all the students in the University of Porto Rico has given sufficient data to justify certain conclusions. In the three examinations a total of 1,412 students have been examined, of whom 616 were men and 796 were women. The average age of the men examined was 19.59 years and of the women 18.45 years.

A comparison of the blowing power (in pounds) for the first examination in September, 1915, and the second examination in June, 1916, for both men and women, shows a distinct gain during the school year, resulting from regular and systematic physical exercises.

	Men		Women	
	Sept., 1915	June, 1916	Sept., 1915	June, 1916
15 years.....	1.62	2.00	1.36	.....
16 years.....	2.00	2.28	1.39	.....
17 years.....	2.20	2.55	1.16	1.92
18 years.....	2.12	2.91	1.11	2.25
19 years.....	2.21	2.52	1.15	1.30
20 years.....	2.38	3.03	1.05	2.50
21 years and more.....	2.30	2.55	.98	1.30

Following is a comparison of the results of the examination in blowing power for the two examinations of September, 1915, and September, 1916. Here we find in both years a gradually increasing percentage on the part of the men and a gradually decreasing percentage on the part of the women, according to age.

It is very probable that this steady decrease on the part of the women as they advance in age is due to failure to take the proper amount of exercise and to improper modes of dress.

	Men		Women	
	1915	1916	1915	1916
15 years.....	1.62	2.29	1.36	1.82
16 years.....	2.00	1.58	1.39	1.75
17 years.....	2.20	2.56	1.16	1.50
18 years.....	2.12	2.49	1.11	1.78
19 years.....	2.21	2.45	1.15	1.66
20 years.....	2.38	2.75	1.05	1.77
21 years and more.....	2.30	2.84	.98	1.53

The following table shows the average amount of chest expansion (difference between chest expanded and chest contracted in inches) for men and women. Here also there is a gradual increase on the part of the men, though not so regular nor so marked as in the blowing power and with a notable exception at 16 years of age. On the part of the women, the highest per cent is also reached at 16, there being little difference between the averages for the other years, and a decrease for the women of more than 21 years of age. It will be noted that the women of 18, 19, and 20 years of age surpass the men of equal age.

	Men	Women
15 years	2.36	2.61
16 years	4.00	3.10
17 years	2.66	2.61
18 years	2.93	2.95
19 years	2.86	3.03
20 years	2.81	3.09
21 years and more	3.01	2.96

Judging a good condition as equal to 90 per cent, and imperfect as equal to 70 per cent in the test of sight, hearing, condition of teeth, heart, and lungs, the students examined averaged as follows for the two years:

	Men		Women	
	Sept., 1915	Sept., 1916	Sept., 1915	Sept., 1916
Sight	79.95	83.91	78.10	82.04
Hearing	86.12	88.04	89.78	89.16
Condition of teeth	76.10	78.59	79.21	80.60
Heart	88.30	89.56	88.69	88.71
Lungs	84.69	89.34	75.54	89.54

We note that in both examinations the men surpassed the women in sight, whereas the women have higher averages regarding hearing and condition of the teeth. While in 1915 they surpassed the men in general condition of the heart and fell below in condition of the lungs, in 1916 the situation is exactly reversed. Probably the latter examination represents more truly the average, as it was more minute and rigorous than the one given in 1915. It will be noted that the general condition of students is much better in 1916 than it was in 1915.

Among the 450 students examined in September, 1916, it was found that 161 were suffering from defective sight. Most of these cases were such as can be relieved by the use of glasses. Of the total number examined, 29 were found who had defective hearing, 21 had some weakness of the heart, and 11 were found who had weak lungs. One case of well-defined tuberculosis was discovered, and the student sent home. Several more cases were noted for monthly observation by the University physician. Of the total number, 9 had adenoids, while 229, or more than half the student body, were found to be in need of dental treatment.

A hemoglobin test was made this year by the Tallqvist method of all students examined, and it found that the average results obtained were 80.04 for the men and 77.60 per cent for the women. The average for Porto Rico should not fall below 85 per cent, and the average found indicates a poverty of blood that demands attention.

The above results emphasize the urgent need of physical examinations and the treatment of physical defects among the grade children. By the time students reach the University much harm has been done which could have been avoided had attention been called earlier to the need of specific treatment. School and medical men of to-day are agreed that the defects mentioned interfere seriously with the intellectual ability and progress of the child, and to leave the matter till the student is of university age is a serious mistake. The university does all it can to call attention to physical defects and suggest remedies for them, but in many cases the delay has been such that the best results cannot be obtained from the treatment.

Following are tables showing the anthropometric measurements of male and female students in the University of Porto Rico, Tables A to L, inclusive, showing the results, by years, of the successive examinations. These tables show that the students of a certain age at the time of any given examination compare very closely with the students of the same age at the time of the other examinations, so that the general average measurements for each group examined, as given in Tables N to Y, inclusive, may be accepted as representing very closely the average man or woman of the age indicated.

It will be noted that in Table N the Porto Rican boy of 16 has the advantage over the American boy of 16 in nearly all the measurements. The same is true in Table O, showing the development at 17 years of age. In Table P, showing both at the age of 18, the development is nearly the same, while in Table Q, representing the development at 19, the American boy is in the lead. There seems to be

little additional development of the Porto Rican boy after the age of 18, while there is a continuous development on the part of the American boy up to and including the twenty-second year.

In the case of the girls, the Porto Rican girls of 16 and 17 show a better general development than American girls of the same ages (Tables T and U), while in Table V, at the age of 18, measurements average about the same. From this age, however, the American girl continues to develop, while the measurements given in Tables W, X, and Y show that the physical development of the Porto Rican girl practically ceases. The development of the American boy and girl as regards hip and thigh measurements equals or surpasses the Porto Rican boy or girl, however, even at 16 or 17, thus indicating the general tendency toward a heavier, larger, final bodily development in the case of the northern people.

In Tables M and Z where the general averages of Porto Rican men and women from 16 to 28 years of age are compared with the averages of American men and women from 17 to 30 years of age, it is seen that the American men surpass the Porto Rican men in every measurement except the depth of chest, and the American women except in regard to depth of chest and waist measure. This is probably the result of malnutrition due to improper feeding of children, resulting in consequent softening of the bones and protrusion of the breast bone, and the same cause would increase the girth of the waist. The prevalent marked depth of chest in both men and women indicates that this characteristic is tending to become a racial characteristic among the Porto Ricans.

If the statements made above, to the effect that at the age of 18 the physical development of the Porto Rican man and woman has practically reached its highest point, we may consider that an average of the measurements of the men and women from and after that age would give us what would practically be the representative physical development of the Porto Rican adult. These averages are found in Table XX.

For the working out of a standard for Porto Rican development, it would be unfair to accept the standards set for people of another race and of another climate, and while it is not claimed that the figures in Table XX represent the ideal of physical development for the adult in Porto Rico, it is urged that they be accepted as the representative development until data shall be collected which will disprove them.

TABLE A.—Average anthropometric measurements of male students 16 years of age for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	64.76	64.	64.50
Weight.....	111.17	101.81	103.33
Shoulders.....	14.89	14.09	14.25
Chest, transversal.....	10.03	9.88	9.17
Chest, ant. post.....	7.80	7.84	7.72
Neck.....	12.60	12.81	12.50
Chest, muscular.....	30.82	31.19	32.17
Chest, natural.....	29.87	30.38	30.50
Chest, expanded.....	31.78	32.75	33.75
Chest, contracted.....	28.16	29.88	29.75
Waist.....	26.91	28.09	26.83
Hips.....	31.57	28.56	31.33
Right arm down.....	8.64	8.38	7.03
Right arm up.....	9.48	9.03	9.75
Right forearm.....	9.16	9.31	9.
Left arm down.....	8.48	8.47	6.91
Left arm up.....	10.03	8.91	9.13
Left forearm.....	8.98	9.19	9.25
Right thigh.....	18.	17.50	17.
Right calf.....	12.50	12.28	12.33
Left thigh.....	17.80	17.41	17.17
Left calf.....	12.73	12.28	12.

TABLE B.—Average anthropometric measurements of male students 17 years old for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	62.75	65.	65.53
Weight.....	111.33	111.08	117.83
Shoulders.....	15.34	14.91	15.09
Chest, transversal.....	10.33	10.01	10.
Chest, ant. post.....	7.98	7.98	8.01
Neck.....	12.98	13.09	12.90
Chest, muscular.....	31.59	31.77	33.07
Chest, natural.....	30.57	31.19	32.15
Chest, expanded.....	32.45	33.35	34.21
Chest, contracted.....	30.11	30.72	31.55
Waist.....	24.38	22.07	28.69
Hips.....	32.30	31.25	33.
Right arm down.....	8.77	8.93	7.21
Right arm up.....	9.56	9.52	9.58
Right forearm.....	9.70	9.69	9.29
Left arm down.....	8.24	8.77	7.02
Left arm up.....	9.45	9.20	9.35
Left forearm.....	9.08	9.68	9.14
Right thigh.....	18.26	18.40	16.92
Right calf.....	12.62	13.16	12.94
Left thigh.....	17.89	18.42	17.45
Left calf.....	12.60	12.98	12.75

TABLE C.—Average anthropometric measurements of male students 18 years old for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	65.34	65.10	66.72
Weight.....	115.92	118.04	121.32
Shoulders.....	15.47	16.12	15.22
Chest, transversal.....	10.35	10.49	10.23
Chest, ant. post.....	8.20	7.99	8.23
Neck.....	13.08	13.10	13.33
Chest, muscular.....	31.61	34.16	33.57
Chest, natural.....	30.46	31.86	32.77
Chest, expanded.....	32.76	34.09	35.01
Chest, contracted.....	30.25	31.50	32.08
Waist.....	27.48	28.04	29.33
Hips.....	31.98	30.99	33.26
Right arm down.....	8.99	9.42	8.29
Right arm up.....	9.82	9.49	9.88
Right forearm.....	9.49	9.64	9.60
Left arm down.....	8.75	8.88	8.08
Left arm up.....	9.57	9.40	9.63
Left forearm.....	9.25	9.74	9.42
Right thigh.....	18.28	18.96	18.40
Right calf.....	12.55	12.88	13.04
Left thigh.....	18.04	18.47	17.91
Left calf.....	13.10	12.90	13.13

TABLE D.—Average anthropometric measurements of male students 19 years old for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	65.60	65.20	65.62
Weight.....	113.52	103.68	117.38
Shoulders.....	15.42	15.07	15.18
Chest, transversal.....	10.33	10.38	10.10
Chest, ant. post.....	8.09	8.02	8.18
Neck.....	13.	13.69	13.25
Chest, muscular.....	30.76	32.44	33.43
Chest, natural.....	30.45	32.33	32.59
Chest, expanded.....	32.49	33.68	34.69
Chest, contracted.....	30.20	31.13	31.83
Waist.....	26.70	26.61	28.16
Hips.....	30.87	31.15	33.28
Right arm down.....	8.73	8.91	7.46
Right arm up.....	9.64	9.41	10.
Right forearm.....	9.01	9.78	9.22
Left arm down.....	8.62	8.74	7.68
Left arm up.....	9.50	9.27	9.63
Left forearm.....	9.06	9.44	9.21
Right thigh.....	18.24	18.55	18.22
Right calf.....	12.60	13.24	12.82
Left thigh.....	17.76	18.58	18.36
Left calf.....	12.59	13.23	12.75

TABLE E.—Average anthropometric measurements of male students 20 years old for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	65.88	66.	65.86
Weight.....	116.32	113.10	110.55
Shoulders.....	15.75	14.65	14.51
Chest, transversal.....	10.51	10.34	10.34
Chest, ant. post.....	7.09	8.03	8.19
Neck.....	13.33	13.30	13.26
Chest, muscular.....	31.29	32.47	33.25
Chest, natural.....	30.95	32.03	32.12
Chest, expanded.....	33.06	32.73	34.32
Chest, contracted.....	30.70	31.85	31.51
Waist.....	27.51	27.22	28.
Hips.....	32.61	30.51	32.68
Right arm down.....	9.20	9.03	6.98
Right arm up.....	9.90	9.89	9.65
Right forearm.....	9.60	9.73	9.12
Left arm down.....	8.84	8.90	7.03
Left arm up.....	9.78	9.59	9.85
Left forearm.....	9.43	9.57	9.17
Right thigh.....	18.41	18.46	18.14
Right calf.....	12.91	13.00	12.89
Left thigh.....	18.17	18.30	17.75
Left calf.....	12.85	13.11	12.77

TABLE F.—Average anthropometric measurements of male students 21 years and over for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	66.73	66.21	66.18
Weight.....	120.31	125.76	118.58
Shoulders.....	15.56	15.81	16.01
Chest, transversal.....	10.55	10.81	10.75
Chest, ant. post.....	8.10	8.32	8.26
Neck.....	13.45	13.63	13.54
Chest, muscular.....	32.59	33.51	33.83
Chest, natural.....	31.56	32.71	32.64
Chest, expanded.....	33.66	34.67	34.94
Chest, contracted.....	31.42	31.99	31.93
Waist.....	28.22	28.83	29.46
Hips.....	32.82	31.97	33.13
Right arm down.....	9.04	9.18	8.13
Right arm up.....	10.02	9.97	9.83
Right forearm.....	9.63	9.87	9.59
Left arm down.....	8.86	8.96	7.88
Left arm up.....	9.86	9.74	9.67
Left forearm.....	9.73	9.58	9.92
Right thigh.....	18.57	18.32	17.99
Right calf.....	12.61	12.88	12.82
Left thigh.....	18.24	18.30	17.96
Left calf.....	12.53	13.01	12.83

TABLE G.—Average anthropometric measurements of female students 16 years of age for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.	61.73	61.60	61.51
Weight.	105.59	112.20	107.99
Shoulders.	13.43	13.55	13.88
Chest, transversal.	9.21	9.13	9.61
Chest, ant. post.	6.84	6.67	6.77
Neck.	11.96	12.34	11.74
Chest, muscular.	29.79	30.61	29.43
Chest, natural.	29.07	29.53	29.26
Chest, expanded.	31.06	31.65	31.46
Chest, contracted.	28.28	29.63	28.36
Waist.	25.40	25.48	25.48
Hips.	34.01	32.75	33.06
Right arm down.	8.09	8.05	8.92
Right arm up.	8.75	8.36	9.98
Right forearm.	8.25	9.29	9.96
Left arm down.	7.98	8.50	8.76
Left arm up.	8.56	8.45	8.81
Left forearm.	8.12	9.27	8.27
Right thigh.	17.85	19.95	19.06
Right calf.	12.23	13.21	12.61
Left thigh.	17.84	19.68	18.98
Left calf.	12.24	13.20	12.74

TABLE H.—Average anthropometric measurements of female students 17 years of age for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.	61.46	63.	62.23
Weight.	104.69	111.93	105.76
Shoulders.	13.41	13.62	13.78
Chest, transversal.	8.98	9.14	9.75
Chest, ant. post.	6.90	6.88	6.63
Neck.	12.01	12.34	11.63
Chest, muscular.	29.75	29.93	30.04
Chest, natural.	28.77	29.29	29.53
Chest, expanded.	30.71	31.46	31.19
Chest, contracted.	27.83	29.73	28.58
Waist.	24.77	26.95	24.89
Hips.	33.46	34.83	33.63
Right arm down.	8.10	8.34	8.57
Right arm up.	8.64	8.55	9.68
Right forearm.	8.28	9.43	8.27
Left arm down.	8.06	8.56	8.50
Left arm up.	8.61	8.51	9.49
Left forearm.	8.12	9.39	8.11
Right thigh.	17.88	19.39	18.59
Right calf.	12.37	13.01	12.46
Left thigh.	17.85	19.09	18.47
Left calf.	12.33	13.	12.49

TABLE I.—Average anthropometric measurements of female students 18 years of age for three successive examinations

	Sept., 1915	June, 1916	Sept., 1916
Height.....	60.84	60.24	61.93
Weight.....	103.25	104.34	107.37
Shoulders.....	13.37	13.47	13.83
Chest, transversal.....	8.96	9.01	9.86
Chest, ant. post.....	7.06	7.03	6.79
Neck.....	11.96	12.12	11.69
Chest, muscular.....	29.83	30.10	30.69
Chest, natural.....	28.92	29.68	29.83
Chest, expanded.....	30.93	31.19	31.71
Chest, contracted.....	28.53	28.90	28.76
Waist.....	24.42	25.84	24.83
Hips.....	33.16	32.85	33.79
Right arm down.....	8.05	8.49	8.59
Right arm up.....	8.64	8.29	9.67
Right forearm.....	8.24	9.14	8.33
Left arm down.....	7.94	8.34	8.58
Left arm up.....	8.58	8.23	9.59
Left forearm.....	8.11	9.20	8.19
Right thigh.....	17.93	19.31	18.89
Right calf.....	12.37	13.08	12.62
Left thigh.....	17.93	18.71	18.69
Left calf.....	12.34	12.82	12.55

TABLE J.—Average anthropometric measurements of female students 19 years of age for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	61.15	62.90	61.80
Weight.....	107.82	107.76	106.34
Shoulders.....	13.62	13.55	13.83
Chest, transversal.....	9.08	9.05	9.95
Chest, ant. post.....	7.11	7.01	6.85
Neck.....	12.21	12.15	11.66
Chest, muscular.....	30.16	30.12	30.49
Chest, natural.....	29.38	29.44	29.50
Chest, expanded.....	31.47	30.52	32.05
Chest, contracted.....	28.60	29.77	29.02
Waist.....	25.09	25.27	24.50
Hips.....	33.76	30.63	33.16
Right arm down.....	8.33	8.47	8.92
Right arm up.....	8.92	8.37	9.76
Right forearm.....	8.41	9.20	8.22
Left arm down.....	8.23	8.35	8.60
Left arm up.....	8.74	8.32	9.52
Left forearm.....	8.28	9.42	8.14
Right thigh.....	18.30	18.92	18.87
Right calf.....	12.47	12.89	12.55
Left thigh.....	18.19	18.93	18.69
Left calf.....	12.47	12.77	12.59

TABLE K.—Average anthropometric measurements for female students 20 years of age for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	62.	63.10	61.78
Weight.....	106.85	106.21	107.87
Shoulders.....	13.48	13.59	13.83
Chest, transversal.....	8.86	9.06	9.92
Chest, ant. post.....	6.95	7.43	6.78
Neck.....	12.03	12.58	11.72
Chest, muscular.....	29.91	30.58	30.76
Chest, natural.....	28.73	29.90	30.10
Chest, expanded.....	30.73	30.29	32.03
Chest, contracted.....	27.89	28.16	28.94
Waist.....	24.64	26.55	24.93
Hips.....	33.65	33.09	34.09
Right arm down.....	8.13	8.65	8.77
Right arm up.....	8.17	8.36	9.68
Right forearm.....	8.28	9.14	8.20
Left arm down.....	8.08	8.50	8.63
Left arm up.....	8.65	8.03	9.55
Left forearm.....	8.20	9.21	8.08
Right thigh.....	17.98	18.73	18.90
Right calf.....	12.63	12.92	12.52
Left thigh.....	17.97	18.25	18.77
Left calf.....	12.61	12.89	12.63

TABLE L.—Average anthropometric measurements of female students 21 years and over for three successive examinations.

	Sept., 1915	June, 1916	Sept., 1916
Height.....	61.97	61.42	62.82
Weight.....	108.84	112.78	115.68
Shoulders.....	13.77	13.64	14.03
Chest, transversal.....	9.18	9.11	10.
Chest, ant. post.....	6.84	7.12	6.83
Neck.....	12.02	12.12	11.84
Chest, muscular.....	30.25	29.66	30.71
Chest, natural.....	29.38	28.45	30.12
Chest, expanded.....	31.27	31.28	32.13
Chest, contracted.....	28.52	28.57	29.17
Waist.....	24.65	25.50	25.01
Hips.....	34.05	34.93	34.28
Right arm down.....	8.06	8.70	8.70
Right arm up.....	8.92	8.59	9.48
Right forearm.....	8.26	9.45	8.49
Left arm down.....	7.93	8.50	8.65
Left arm up.....	8.81	8.35	9.65
Left forearm.....	8.06	9.23	8.37
Right thigh.....	18.65	19.58	19.08
Right calf.....	12.34	12.68	13.09
Left thigh.....	18.64	19.62	18.98
Left calf.....	12.26	12.66	13.11

TABLE N.

	Average measurements of 25 male students 16 years of age	Average measurements of Yale male students 16.7 years of age
Height.....	64.42	62.
Weight.....	105.44	100.
Shoulders.....	14.41	14.2
Chest, transversal.....	9.69	9.
Chest, ant. post.....	7.79	6.3
Neck.....	12.64	12.2
Chest, muscular.....	31.39	.....
Chest, natural.....	30.25	29.2
Chest, expanded.....	32.76	31.
Chest, contracted.....	29.26	.....
Waist.....	27.28	24.5
Hips.....	30.49	31.3
Right arm down.....	8.02	8.3
Right arm up.....	9.42	9.5
Right forearm.....	9.16	8.9
Left arm down.....	7.95	8.1
Left arm up.....	9.36	9.5
Left forearm.....	9.14	8.7
Right thigh.....	17.50	17.2
Right calf.....	12.37	12.
Left thigh.....	17.46	17.
Left calf.....	12.34	12.

TABLE O.

	Average measurements of 75 male students 17 years of age	Average measurements of Yale male students 17.1 years of age
Height.....	64.41	63.2
Weight.....	113.41	109.
Shoulders.....	15.11	14.5
Chest, transversal.....	10.11	9.2
Chest, ant. post.....	7.99	6.5
Neck.....	12.99	12.5
Chest, muscular.....	32.14	.....
Chest, natural.....	31.30	30.1
Chest, expanded.....	33.34	32.
Chest, contracted.....	30.79	.....
Waist.....	25.05	25.4
Hips.....	32.18	32.
Right arm down.....	8.30	8.6
Right arm up.....	9.55	9.7
Right forearm.....	9.56	9.1
Left arm down.....	8.01	8.4
Left arm up.....	9.33	9.7
Left forearm.....	9.30	8.9
Right thigh.....	17.86	17.7
Right calf.....	12.91	12.2
Left thigh.....	17.92	17.5
Left calf.....	12.78	12.2

TABLE P.

	Average measurements of 92 male students 18 years of age	Average measurements of Yale students 18 years of age
Height.....	65.72	65.5
Weight.....	118.43	122.
Shoulders.....	15.60	15.3
Chest, transversal.....	10.36	10.
Chest, ant. post.....	8.14	6.8
Neck.....	13.14	13.1
Chest, muscular.....	33.11	.....
Chest, natural.....	31.69	31.9
Chest, expanded.....	33.95	33.7
Chest, contracted.....	31.28	.....
Waist.....	28.08	27.
Hips.....	32.08	33.5
Right arm down.....	8.90	9.1
Right arm up.....	9.73	10.6
Right forearm.....	9.58	9.6
Left arm down.....	8.57	9.
Left arm up.....	9.50	10.6
Left forearm.....	9.47	9.4
Right thigh.....	18.55	18.9
Right calf.....	12.82	12.9
Left thigh.....	18.14	18.7
Left calf.....	13.04	12.9

TABLE Q.

	Average measurements of 107 male students 19 years of age	Average measurements of Yale students 19.1 years of age
Height.....	65.47	67.
Weight.....	111.53	131.
Shoulders.....	15.22	15.8
Chest, transversal.....	10.27	10.4
Chest, ant. post.....	8.15	7.2
Neck.....	13.31	13.5
Chest, muscular.....	32.21	.....
Chest, natural.....	31.79	33.1
Chest, expanded.....	33.62	35.1
Chest, contracted.....	31.05	.....
Waist.....	27.15	28.1
Hips.....	31.77	34.6
Right arm down.....	8.40	9.7
Right arm up.....	9.68	11.2
Right forearm.....	9.34	10.
Left arm down.....	8.35	9.5
Left arm up.....	9.47	11.2
Left forearm.....	9.24	9.8
Right thigh.....	18.34	19.8
Right calf.....	12.89	13.5
Left thigh.....	18.23	19.6
Left calf.....	12.86	13.5

TABLE R.

	Average measurements of 78 male students 20 years of age	Average measurements of Yale students 20 years of age
Height.....	65.91	68.4
Weight.....	113.32	143.
Shoulders.....	14.97	16.3
Chest, transversal.....	10.39	10.9
Chest, ant. post.....	7.77	7.4
Neck.....	13.29	14.
Chest, muscular.....	32.34	.....
Chest, natural.....	31.70	34.5
Chest, expanded.....	33.37	36.3
Chest, contracted.....	31.35	.....
Waist.....	27.58	29.2
Hips.....	31.93	35.7
Right arm down.....	8.40	10.3
Right arm up.....	9.81	11.9
Right forearm.....	9.48	10.5
Left arm down.....	8.25	10.
Left arm up.....	9.74	11.9
Left forearm.....	9.39	10.2
Right thigh.....	18.34	20.6
Right calf.....	12.93	14.
Left thigh.....	18.07	20.4
Left calf.....	12.91	14.

TABLE S.

	Average measurements of 223 male students 21 years and over	Average measurements of Yale students 22.6 years of age
Height.....	66.37	71.
Weight.....	121.55	164.
Shoulders.....	15.79	17.
Chest, transversal.....	10.55	12.1
Chest, ant. post.....	8.23	7.8
Neck.....	13.54	14.6
Chest, muscular.....	33.31	.....
Chest, natural.....	32.30	36.6
Chest, expanded.....	34.42	38.6
Chest, contracted.....	31.78	.....
Waist.....	28.84	31.1
Hips.....	32.64	37.5
Right arm down.....	8.78	11.1
Right arm up.....	9.94	12.9
Right forearm.....	9.69	11.1
Left arm down.....	8.57	11.
Left arm up.....	9.75	12.9
Left forearm.....	9.74	10.8
Right thigh.....	18.29	22.
Right calf.....	12.77	14.8
Left thigh.....	18.17	21.8
Left calf.....	12.79	14.8

TABLE T.

	Average measurements of 53 female Porto Rican students of 16 years of age	Average measurements of female students in Oberlin College, 16.5 years of age
Height	61.61	59.8
Weight	108.59	94.6
Shoulders	13.62	13.3
Chest, transversal	9.32	
Chest, ant. post.	6.76	5.8
Neck	12.01	11.3
Chest, muscular	29.94	
Chest, natural	29.27	27.5
Chest, expanded	31.39	29.8
Chest, contracted	28.76	
Waist	25.45	22.4
Hips	33.27	32.2
Right arm down	8.35	
Right arm up	9.03	8.9
Right forearm	9.17	8.2
Left arm down	8.41	
Left arm up	8.61	8.6
Left forearm	8.55	8.
Right thigh	18.95	18.8
Right calf	12.68	11.6
Left thigh	18.83	18.8
Left calf	12.73	11.6

TABLE U.

	Average measurements of 131 female Porto Rican students 17 years of age	Average measurements of female students in Wellesly College 17 years of age	Average measurements of female students in Oberlin College 17 years of age
Height	62.33	57.9	60.2
Weight	107.46	88.2	97.7
Shoulders	13.60	12.8	13.5
Chest, transversal	9.29		
Chest, ant. post.	6.80	5.7	5.9
Neck	11.99	11.1	11.4
Chest, muscular	29.91		
Chest, natural	29.19	25.4	28.3
Chest, expanded	31.12	27.	30.1
Chest, contracted	28.71		
Waist	25.54	21.3	22.7
Hips	33.97	30.3	33.
Right arm down	8.34		
Right arm up	8.96	8.7	9.
Right forearm	8.66	7.2	8.3
Left arm down	8.37		
Left arm up	8.87	8.6	8.9
Left forearm	8.54	7.1	8.1
Right thigh	18.62	17.9	19.2
Right calf	12.61	11.4	11.8
Left thigh	18.47	17.8	19.2
Left calf	12.61	11.3	11.8

TABLE V.

	Average measurements of 216 female Porto Rican students of 18 years of age	Average measurements of female students in Wellesly College 18.1 years of age	Average measurements of female students in Oberlin College 18.1 years of age
Height.....	61.	60.3	61.4
Weight.....	104.99	101.5	104.3
Shoulders.....	13.56	13.5	13.9
Chest, transversal.....	9.28		
Chest, ant. post.....	6.96	6.3	6.2
Neck.....	11.92	11.5	11.7
Chest, muscular.....	30.21		
Chest, natural.....	29.48	26.9	29.1
Chest, expanded.....	31.28	29.4	30.7
Chest, contracted.....	28.73		
Waist.....	25.03	22.8	23.4
Hips.....	33.27	32.4	34.2
Right arm down.....	8.38		
Right arm up.....	8.87	9.6	9.4
Right forearm.....	8.57	7.8	8.6
Left arm down.....	8.29		
Left arm up.....	8.80	9.4	9.3
Left forearm.....	8.50	7.7	8.4
Right thigh.....	18.71	19.6	20.1
Right calf.....	12.69	12.2	12.2
Left thigh.....	18.44	19.5	20.0
Left calf.....	12.57	12.2	12.2

TABLE W.

	Average measurements of 212 female Porto Rican students of 19 years of age	Average measurements of female students in Wellesly College 19 years of age	Average measurements of female students in Oberlin College 19.1 years of age
Height.....	61.95	62.	62.4
Weight.....	107.31	111.8	110.2
Shoulders.....	13.67	14.	14.1
Chest, transversal.....	9.36		
Chest, ant. post.....	6.99	6.7	6.4
Neck.....	12.01	11.9	11.9
Chest, muscular.....	30.26		
Chest, natural.....	29.44	27.9	29.6
Chest, expanded.....	31.35	30.6	31.4
Chest, contracted.....	29.13		
Waist.....	24.95	23.8	24.
Hips.....	32.52	33.9	35.2
Right arm down.....	8.57		
Right arm up.....	9.02	10.2	9.8
Right forearm.....	8.61	8.3	8.8
Left arm down.....	8.39		
Left arm up.....	8.86	10.	9.6
Left forearm.....	8.61	8.1	8.6
Right thigh.....	18.69	20.8	20.8
Right calf.....	12.64	12.9	12.5
Left thigh.....	18.60	20.7	20.8
Left calf.....	12.61	12.8	12.3

TABLE X.

	Average measurements of 95 female Porto Rican students of 20 years of age	Average measurements of female students in Wellesly College 20 years of age	Average measurements of female students in Oberlin College 20 years of age
Height.....	62.29	63.5	63.1
Weight.....	106.98	121.1	116.1
Shoulders.....	13.63	14.4	14.4
Chest, transversal.....	9.28	.....	.....
Chest, ant. post.....	7.05	7.	6.6
Neck.....	12.11	12.3	12.2
Chest, muscular.....	30.42	.....	.....
Chest, natural.....	29.58	29.	30.3
Chest, expanded.....	31.02	31.6	32.2
Chest, contracted.....	28.33	.....	.....
Waist.....	25.37	24.8	24.6
Hips.....	33.61	35.5	36.1
Right arm down.....	8.52	.....	.....
Right arm up.....	8.92	10.7	10.2
Right forearm.....	8.54	8.7	9.
Left arm down.....	8.40	.....	.....
Left arm up.....	8.74	10.5	10.
Left forearm.....	8.49	8.6	8.8
Right thigh.....	18.54	21.9	21.4
Right calf.....	12.69	13.4	12.9
Left thigh.....	18.33	21.8	21.3
Left calf.....	12.71	13.4	12.9

TABLE Y.

	Average measurements of 70 female Porto Rican students 21 and more years of age	Average measurements of female students in Wellesly College 22.7 years of age	Average measurements of female students in Oberlin College 22 years of age
Height.....	62.07	65.9	64.5
Weight.....	112.43	140.4	125.6
Shoulders.....	13.81	15.2	14.8
Chest, transversal.....	9.43	.....	.....
Chest, ant. post.....	6.93	7.6	6.9
Neck.....	11.99	13.	12.5
Chest, muscular.....	30.21	.....	.....
Chest, natural.....	29.32	31.3	31.4
Chest, expanded.....	31.56	33.5	33.
Chest, contracted.....	28.75	.....	.....
Waist.....	25.05	26.7	25.5
Hips.....	34.42	38.2	37.7
Right arm down.....	8.49	.....	.....
Right arm up.....	8.99	11.7	10.7
Right forearm.....	8.73	9.4	9.3
Left arm down.....	8.36	.....	.....
Left arm up.....	8.94	11.4	10.6
Left forearm.....	8.55	9.3	9.2
Right thigh.....	19.10	23.9	22.4
Right calf.....	12.70	14.5	13.5
Left thigh.....	19.08	23.7	22.4
Left calf.....	12.68	14.4	13.5

TABLE M.

	Average measurements of Porto Rican male students from 16 to 28 years of age	Average measurements of American men from 17 to 30 of age
Height.....	64.94	67.6
Weight.....	110.67	138.6
Chest, transversal.....	10.26	10.8
Chest, ant. post.....	7.92	7.5
Shoulders.....	15.06	16.1
Neck.....	13.05	13.9
Chest, contracted.....	30.63	33.7
Chest, expanded.....	33.25	36.7
Waist.....	27.92	29.1
Right forearm.....	9.33	10.4
Left forearm.....	9.20	10.4
Right arm up.....	9.61	11.9
Right arm down.....	8.45	10.4
Left arm up.....	9.42	11.8
Left arm down.....	8.22	10.3
Right thigh.....	17.97	20.3
Left thigh.....	17.83	20.2
Right calf.....	12.64	13.8
Left calf.....	12.66	13.8

TABLE Z.

	Average measurements of Porto Rican students (female) from 16 to 28 years of age	Average measurements of American woman from 17 to 30 years of age
Height.....	61.78	62.9
Weight.....	107.82	116.
Chest, transversal.....	9.35	10.
Chest, ant. post.....	6.93	6.8
Shoulders.....	13.64	14.4
Neck.....	11.98	12.1
Chest, natural.....	29.19	29.7
Chest, contracted.....	28.57	29.6
Chest, expanded.....	31.29	32.
Waist.....	25.14	24.3
Hips.....	33.76	35.7
Right forearm.....	8.71	8.8
Left forearm.....	8.61	8.6
Right arm down.....	8.44	9.8
Left arm down.....	8.40	9.7
Right arm up.....	8.99	10.8
Left arm up.....	8.82	10.6
Right thigh.....	18.79	21.1
Left thigh.....	18.65	21.
Right calf.....	12.66	13.
Left calf.....	12.64	13.

TABLE XX.—Representative development of Porto Rican students at the University of Porto Rico of more than 18 years of age.

	Men	Women
Height.....	65.87	61.83
Weight.....	116.21	107.93
Shoulders.....	15.39	13.67
Chest, transversal.....	10.39	9.34
Chest, ant. post.....	8.07	6.98
Neck.....	13.32	12.01
Chest, muscular.....	32.74	30.27
Chest, natural.....	31.87	29.45
Chest, expanded.....	33.84	31.30
Chest, contracted.....	31.36	28.23
Waist.....	27.96	25.08
Hips.....	32.13	33.45
Right arm down.....	8.62	8.49
Right arm up.....	9.79	8.95
Right forearm.....	9.53	8.61
Left arm down.....	8.43	8.36
Left arm up.....	9.61	8.83
Left forearm.....	9.46	8.29
Right thigh.....	18.38	18.76
Right calf.....	12.85	12.68
Left thigh.....	18.15	18.61
Left calf.....	12.90	12.64

At the time the first measurements were taken in the University, letters were addressed to the chief educational institutions in all Latin American countries, asking if similar work had been done there, and if so, requesting information and data. The only affirmative response was from the *Museo Nacional* of Santiago, Chili. This institution has done something along the line of anthropometric measurements, but with a younger class of boys, the greatest number of students measured being under sixteen years of age. Data was sent only for boys.

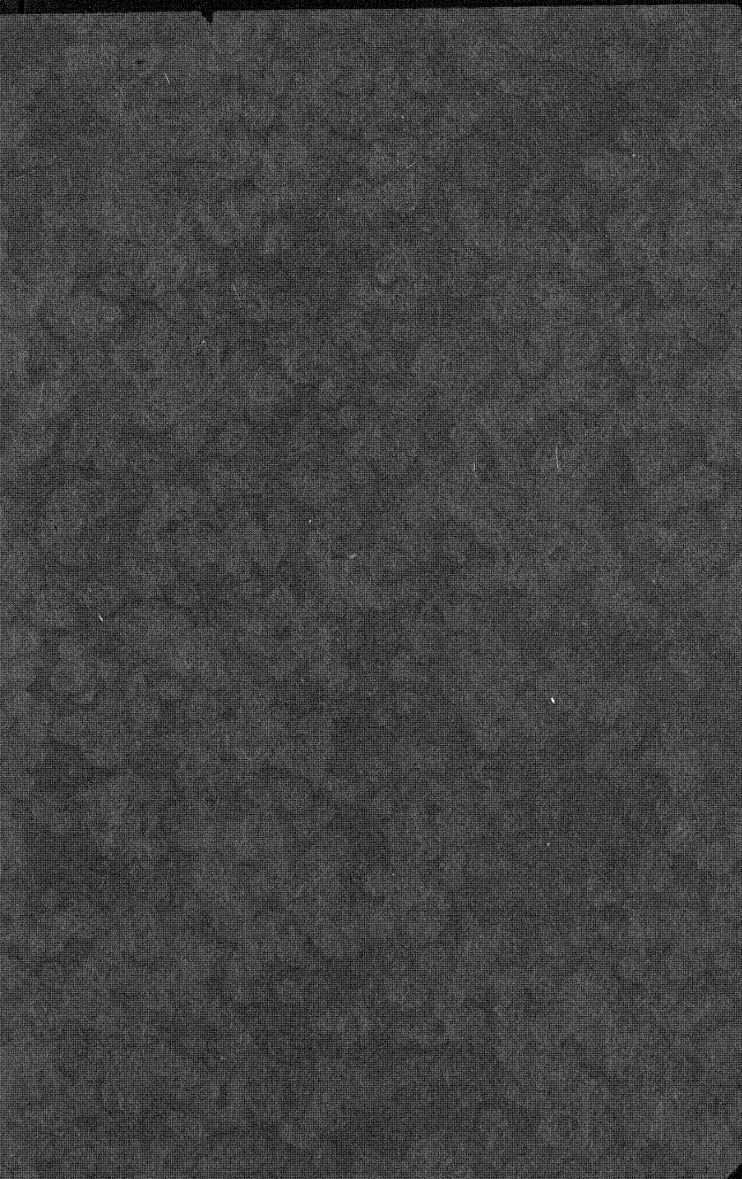
From a comparison of the measurements of the boys of the two countries, it will be noted that the Chilean boys surpass the Porto Rican boys at all ages in height and weight, the difference in weight being very marked. The Chilean boys also surpass the Porto Rican boys in girth of chest, breadth of chest, and, beginning with nineteen years of age, depth of chest. The fact that the Porto Rican boy, though outweighed and outmeasured by the Chilean boy up to nineteen years of age, has a greater depth of chest and girth of waist tends to prove a statement made earlier in this bulletin to the effect that the development of the Porto Rican along these lines is abnormal.

Measurements were sent from Chili in the metric system, and were transposed into the English system by the writer. The chest measure

for Porto Rican boys in the following tables does not correspond to measurements given in previous tables, inasmuch as the Chilean chest measurements were an average between the figures for chest expanded and those for chest contracted. The same method was used for the simple chest measurements given in the following comparisons:

TABLE XXX.—Tables showing comparative development of Porto Rican and Chilean boys from 16 to 20 years of age.

		Porto Rico	Chili
16 years	{ Number observed	16.	340.
	{ Height	64.42	64.49
	{ Weight	105.44	123.64
	{ Chest	31.01	33.09
	{ Chest, transversal	9.69	10.34
	{ Chest, ant. post.	7.79	7.66
	{ Waist	27.28	25.11
17 years	{ Number observed	75.	248.
	{ Height	64.41	65.43
	{ Weight	113.41	128.48
	{ Chest	32.06	33.52
	{ Chest, transversal	10.11	10.72
	{ Chest, ant. post.	7.99	7.97
	{ Waist	25.05	25.54
18 years	{ Number observed	92.	138.
	{ Height	65.72	65.86
	{ Weight	118.43	133.32
	{ Chest	32.61	34.33
	{ Chest, transversal	10.36	11.04
	{ Chest, ant. post.	8.14	8.09
	{ Waist	28.08	26.09
19 years	{ Number observed	107.	65.
	{ Height	65.47	65.94
	{ Weight	111.53	133.98
	{ Chest	32.33	34.66
	{ Chest, transversal	10.27	11.35
	{ Chest, ant. post.	8.15	8.17
	{ Waist	27.15	26.13
20 years	{ Number observed	78.	18.
	{ Height	65.91	66.18
	{ Weight	113.32	113.52
	{ Chest	32.36	34.71
	{ Chest, transversal	10.39	11.43
	{ Chest, ant. post.	7.77	8.33
	{ Waist	27.58	26.44



GN
58
.P9
P9

B 878,064



Porto Rico. University.

Bulletin: Results of the Anthropometric Measurements
among the students at the Univ. of Porto Rico.

(Jan. 1917).

